Qazvin University of Medical Sciences

Faculty of Health

A Thesis

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Title

Investigation of Staphylococcus aureus coagulase positive in traditional cream samples in Qazvin during different seasons in 2016-2017

Supervisor

Razzagh Mahmoudi (Ph.D)

Advisor

Peyman Ghajarbeygi (Ph.D)

Saeed SHahsavari (M.Sc)

By

Nasim Biglari KHoshmaram

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Abstract

Introduction and aim: Foodborne diseases are a common problem in the public health sector. Dairy products are a well-known source of staphylococcal poisoning. Cream is a nutritious dairy product and due to its high nutritional value, close to neutral pH and limited storage capacity, it is a suitable environment for the growth of microorganisms.If inadequate in food hygiene, including cream, at different stages of production, collection, transportation and processing in factories, and distribution and consumption, it may transmit diseases and complications to humans. The aim of this study was to determine the prevalence of Staphylococcus aureus coagulase positive in traditional cream samples presented in Qazvin in 2016-2017.

Material and Methods: The present study was a descriptive cross-sectional study in which 100 traditional cream samples were presented in dairy shops in Qazvin during one year (from September 2016 to August 2017) in different seasons. They were transfered to the Food Safety Laboratory of Qazvin University of Medical Sciences. Sampling was performed according to Standard No. 191 of the Iranian Institute of Standards and Industrial Research and sample preparation was performed according to Standard No. 356. sampling was done Quota randomly so that by using the map of different urban areas of Qazvin municipality, three areas of Qazvin municipality (zones 1, 2 and 3) were identified, then dairy shops in the zones It was identified and randomly selected from region one of 32 samples, from region two of 36 samples and from area of three 32 traditional cream samples (100 samples in total). 500 g of each sample was placed in a sterile container. Specimens such as production location, date and location, sampling time and production time were recorded on each container and transferred to appropriate laboratory for food safety and food safety at Qazvin University of Medical Sciences. Twenty-five samples were collected in each season so that 100 samples were examined during one year (from September 2016 to August 2017). Staphylococcus aureus coagulase-positive bacteria were identified by culture method and then confirmed by PCR method. The results were analyzed using SPSS 23 software. Fisher exact test at the significant level ($P < 0.05$) was used to evaluate the variables.

Results: According to the results of this study, the infection rate of Staphylococcus aureus in different seasons was 10%. All the bacteria were confirmed by PCR. According to Fisher's exact test, no significant relationship was found between season and traditional cream infection with Staphylococcus aureus and different regions of Qazvin and traditional cream infection with Staphylococcus aureus. The highest infection was observed in spring and winter (6 cases). Between the urban areas of Qazvin and the contamination of Staphylococcus aureus with cream, the contamination was greater in area 1 (5 cases) than in areas 2 and 3 but these differences were not significant.

Discussion: According to this study, infection rate of Staphylococcus aureus coagulase positive was 10% in different seasons and highest in spring and winter. It should be noted that according to Iranian National Standard No. 2406 (characteristics of milk microbiology and its products), the level of Staphylococcus aureus in cream should be negative. The present study investigated the prevalence of bacterium directly in traditional cream, in which almost none of the studies studied had prevalence in traditional cream, and further studies could be done in this regard.

Conclusion: Food contamination of Staphylococcus aureus can occur following secondary contamination of food during food preparation and distribution. Traditional foods, including cream, are more likely to be contaminated due to the manipulation of more people than those produced in an industrialized and pasteurized manner. The use of pasteurized dairy products and health surveillance on traditional dairy production centers can play an important role in reducing the prevalence of Staphylococcus aureus in food.

Key words: Staphylococcus aureus، traditional cream، PCR، Microbial contamination, food poisoning